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THE WATER, GAS, AND ELECTRIC LIGHT SUPPLY OF LONDON

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At the outset of a survey of the existing arrangements for the supply to London of water, gas, and electric light, it will perhaps be useful to remind the reader of the development and nature of these metropolitan authorities who are in any way concerned with the special services now under consideration.

The most striking feature in the municipal history of London is the lateness of the time at which there appeared a strong central authority, really representative of the whole body of inhabitants. Until 1855 the "metropolis" did not exist; what was loosely called "London" consisted of the one square mile of the City of London with its ancient Corporation, a ring of urban parishes adjacent to it, and an outer ring of semi-urban, semi-rural parishes. All these parishes were administered by vestries which exercised powers derived chiefly from innumerable local Acts of Parliament. There was no uniformity, and there was no "central" authority for the whole area, except in the matter of police, outside the city; and the commissioners at the head of the police were appointed by, and dependent solely upon, the Home Secretary. The first reform came in 1855, when the Metropolis Management Act for the first time defined the metropolis as consisting of the City of London and certain specified parishes around it. The city was left untouched; the parishes were divided into two classes—those in the first elected each a vestry, while those of the second class were grouped into districts, each with a board elected by the parish vestries. The vestries of the first class and the district boards were given control over local sanitation and roads, and such other powers as they possessed or could obtain under local Acts. For the Metropolis as a whole there was established the Metropolitan Board of Works, appointed

by the city corporation, the vestries and district boards, and not elected directly by the ratepayers; it was at first empowered to deal with main drainage and street improvements, and later to provide parks, bridges, embankments, protection against fire, and other services.

Some modifications of details took place subsequently, but there were no organic changes prior to 1888 and 1899. By the former year the Metropolitan Board of Works, though it had done much good work and carried out many important improvements, had fallen into disrepute, partly owing to its non-representative character, which had always prevented it from being a popular body, and partly owing to certain scandals connected with its administration. The Local Government Act, 1888, replaced it by the directly-elected London County Council, and for the first time London obtained a strong central authority which commanded public interest and was entitled to speak as the representative of the whole community. But the fact that it is only within the last twenty years that such an authority has appeared in London has had for Londoners certain serious consequences, some of which will be described in the present article. Then, eleven years later, the London Government Act abolished the thirty administrative vestries and twelve district boards which divided the Metropolis outside the city, and a large number of lesser authorities, and redivided the area into twenty-eight metropolitan boroughs, each with its mayor, aldermen, and councillors.

The existing authorities in the Metropolis who are in any way concerned with, or interested in, the services now to be considered are, then:

(1) *The London County Council*, governing an "administrative county" of 121 square miles, and armed with vast and varied powers. Especially is it concerned with main drainage and protection against fire; it has considerable powers in public health matters, and exercises a supervisory control over the sanitary work of the Borough Councils.

(2) *The Corporation of the City of London.*
(3) *The Metropolitan Borough Councils.*

The Corporation and the Borough Councils are the local sanitary authorities, and are concerned (*inter alia*) with roads and streets, lighting, and local drainage.

(4) and (5) *The Conservancies of the Thames and the Lea.*

These two bodies are charged with the regulation and safeguarding of navigation in the two rivers, and the prevention of pollution. The Thames conservancy, which is naturally by far the more important, consists of representatives of government departments, of the councils of counties and county boroughs through which the Thames flows, of the London County Council and City Corporation, and of the ship, dock, and wharf-owners. The Lea Conservancy is composed of representatives of a small number of county and municipal authorities.

(6) *The Metropolitan Water Board*, whose constitution and powers will be described later.

But it must be remembered that the administrative county of London is surrounded now by a broad belt of more or less densely-populated territory which, ever increasing in extent, is in reality part of London, but is not included under the authority of the County Council. This belt of "Outer" or "Greater" London is divided into a number of municipal boroughs, such as West Ham, East Ham, Ealing, Wimbledon, and urban districts like Leyton, Tottenham, Walthamstow. In many respects their interests are identical with those of "Inner London," and the separation for local government purposes has become not much more than artificial.

I. WATER SUPPLY.

I. The Conditions Prior to July, 1904.

For nearly a century up to the month of July, 1904, the water supply of London was furnished by eight private companies, possessed of powers and privileges conferred by Acts of Parliament and subject to conditions similarly imposed. Each company had an area to itself, and each supplied a part not merely of London proper but also of the surrounding districts. The following table gives the names of the eight companies, their dates of formation, and the average number of houses and persons supplied:

TABLE I.

COMPANY.	Year of foundation.	Average number of houses, etc., supplied during year 1903.	Average population supplied during year 1903.
New River	1620	178,011	1,290,579
Chelsea	1723	39,555	291,127
Lambeth	1783	128,703	803,108
Southwark (1822) and Vauxhall ..	1805	128,193	860,173
West Middlesex	1806	89,831	664,746
East London	1806	223,891	1,482,156
Kent	1810	106,878	641,269
Grand Junction	1811	73,558	476,659
Totals		968,620*	6,509,817

* See note to Table IV.

The population thus supplied was about two millions greater than the population of the administrative county of London, whilst the area was nearly 620 square miles, as against the 121 square miles of London County. Parliament had originally sanctioned the principle of competition by giving to different companies powers of supply in the same areas; thus the West Middlesex, Grand Junction and East London Companies were erected with areas of supply overlapping the areas of the New River and Chelsea companies. But the disadvantages of competition to the companies were too great, and as early as 1815 coalition began. The New River and East London companies divided their common area into two parts, and agreed not to compete, and gradually by formal or informal agreements the process of complete partition was completed by 1818, and three years later received, subject to certain safeguards, the approval of a Parliamentary Committee.

The total nominal share capital of the companies was at the end of 1897, according to the report of Lord Llandaff's Commission,¹ £10,228,548, with a market value of £32,645,189. There was also preference, debenture, and mortgage stock amounting to £6,203,736, with a market value of £9,060,254. The next two tables show the sources from which the water supply was drawn in 1903, the average daily amount per head furnished by each company, and the maximum and minimum annual average in the twenty years 1884-1903:

¹ Market prices were subsequently affected by the prospect of legislation. The end of 1897 represents a normal period.

TABLE II.

SOURCE.	Imperial gallons.	Percentage of total supply.
Thames.....	42,694,100,774	55.351
Lea.....	17,336,958,265	22.477
Springs and wells.....	17,011,484,232	22.055
Ponds (non-domestic purposes only,.....	90,571,499	.187
Total	77,133,114,770	100.

TABLE III.

COMPANY.	Average daily supply in gallons per head, 1903.	Maximum and minimum daily averages in years 1884-1903.
Chelsea	40.85	Max. 45.31, 1901; min. 33.40, 1888.
East London	27.27	Max. 40.02, 1895; min. 27.27, 1903.
Grand Junction	35.62	Max. 49.61, 1895; min. 35.62, 1903.
Kent	28.47	Max. 33.07, 1895; min. 25.50, 1889.
Lambeth	36.63	Max. 41.95, 1885; min. 30.45, 1889.
New River	31.15	Max. 32.88, 1893; min. 26.80, 1885.
Southwark and Vauxhall	36.36	Max. 42.27, 1895; min. 28.84, 1884.
West Middlesex	34.41	Max. 35.66, 1895; min. 27.52, 1884.
General Average	32.46*	Max. 38.44, 1895; min. 30.80, 1888.

* The lowest average since 1889.

As regards the sources of supply, it should be remarked that the companies which draw from the Thames are subject to various restrictions imposed either in Parliamentary enactments or by agreements with the Thames Conservancy, and there are less complicated restrictions on the amount which may be taken from the Lea. The amount available from these sources is, moreover, limited by natural conditions, and although the supply obtained from springs and wells has increased from 17.3 million gallons per day in 1883 to 46.6 millions in 1903, it has long been evident that new sources must be found. The establishment of the great reservoirs at Staines by a joint committee of the West Middlesex, Grand Junction, and New River companies, the erection of other reservoirs elsewhere in the Thames valley and the Lea district, and the arrangements whereby a deficiency in the area of supply of one company may be made good to some extent by the others—all these only provide for a temporary difficulty, and do not touch the real problem. A Royal Commission in 1891 estimated that the probable population of "Water London"

would be more than eleven millions by 1931. Moreover, the growth of population in the two valleys renders the prevention of pollution even more difficult. It has been apparent for some time that recourse will have to be taken to more distant sources; but inasmuch as the necessary works would be extremely costly and possibly unremunerative, it was scarcely to be expected that private enterprise would undertake them.

Reference has already been made to the conditions imposed upon the companies, and one of them—the restriction of the amounts which may be drawn from the rivers—has already been mentioned. But others require to be noticed in more detail.

(1) The first group relates to the nature and quality of the supply; under the Metropolitan Water Act of 1871 the companies were bound, when required by the proper metropolitan authority, or failing that, the Local Government Board, to provide and keep a constant supply in all districts where regulations for preventing waste, misuse, and contamination, and prescribing the nature and size of pipes, cocks, and cisterns, were complied with by four-fifths of the inhabitants of that district. These regulations were to be made by the companies themselves, with the approval of the Local Government Board. The advantages of the constant supply, as compared with the intermittent supply with cistern storage, are now generally recognized, but it is only quite recently that the obligations of the companies have been enforced. The following table gives the extent of the constant supply at end of 1903:

TABLE IV.

COMPANY.	Houses supplied.	Houses with constant supply.	Percentage.
Chelsea	39,676	39,676	100
East London.	226,165	226,165	100
Grand Junction	75,149	75,149	100
Kent	108,611	108,411	99.8
Lambeth	130,860	102,574	78.4
New River	179,026	177,596	99.2
Southwark and Vauxhall	128,871	122,778	95.3
West Middlesex	90,360	90,360	100
Totals	978,718*	942,709*	96.3

* The number of houses given in this table are somewhat in excess of the real number, owing to the nature of the returns made by the companies, but the figures in the two columns are comparable.

This percentage, 96.3 per cent., compares with 57.5 per cent. in 1889, and the marked improvement is due in no small measure to the action of the County Council.

Further, the Waterworks Clauses Act, 1847, gave the owners and occupiers of houses within the area of supply of a company power to compel it to furnish a supply, provided that their number was such that their water rates would amount to 10 per cent. of the cost of laying down pipes. Under an Act of fifty years later twenty consumers could appeal to the Local Government Board as to defects in the quality or quantity of water supplied, or any consumer or interested local authority could similarly appeal to the Railway and Canal Commissioners. The companies were bound to provide sufficiently for the cleaning and watering of streets, the flushing of drains, and free of charge, the extinction of fires. Finally, an Act passed in 1852 obliged the companies to "effectively filter" the water supplied; for this purpose they employed usually distinguished chemists whose reports were presented monthly to the Local Government Board and published, together with the report of the board's own expert, a "water examiner" appointed by the board, but paid by the companies.

(2) The second group of conditions related to finance. An attempt was made to protect the consumers against exploitation by the monopolist companies by (a) the limitation of dividends, and (b) the settlement of the water charges by Parliament. On nine-tenths² of their ordinary shares the companies were limited to dividends of 10 per cent., and on the remainder to 7½ per cent. and 7 per cent.; but they were entitled to make up back dividends to these amounts. On the preference, mortgage and debenture shares the rates of interest ranged from 5 to 2¾ per cent. By 1887 the West Middlesex had paid the maximum dividend for all the years in which it had been in existence, and had commenced to reduce charges; and by the year 1899 the Chelsea, Kent and Lambeth companies had reached the maximum and were paying arrears, the Grand Junction had reached the limit for the part of its shares entitled to dividends of 7 and 7½, while the New River was paying 13 per cent. The East London and Southwark companies were still below the maximum.

² It had been assumed that the New River Company's dividend was unlimited, but the Arbitrators in 1904 took the opposite view.

The charges authorized by Parliament differed with the various companies, and ranged from 7½ per cent. to 4 per cent. on the annual rateable value of the houses supplied. Extra charges could be imposed for baths, closets, and high services, and the companies could make their own terms for water for industrial purposes. The average rate for household supply was £4.1.10 per hundred of rateable value but there were great variations. Thus, according to the report of Lord Llandaff's Commission, for a house with bath-room, two closets and one high service, rented at £35 and valued at £28 per annum the charge ranged from 2.3½ per £ of rateable value in the Lambeth area to 8½d. per £ in the district of the West Middlesex Company. For a house, similarly equipped, with a rental of £120 and a valuation of £100 the East London company charged 1.5¾ per £, and the West Middlesex 1½d. Yet the report of the commission showed that the companies which charged the higher rates received less per house and per mile of mains than the companies charging the lower rates, since they supplied districts in which the average rateable value was low. Thus the four companies entitled to charge from 7½ to 5 per cent. (the East London, Lambeth, Southwark and Vauxhall, and Kent) received in 1899 £1.10 per house and £233 per mile of mains; the other four companies, limited to 4 per cent., received £2,16.4 per house and £461 per mile of mains. It will be noticed that the revenue of the companies increased automatically, and without any extension of service on their part, with the increase of rateable values in London; these rose in the administrative county by 65.3 per cent. between 1871 and 1891, and considerably, though to a smaller extent, in the surrounding districts.

Finally, the companies, after 1886, were required to make contributions to a sinking fund; if they borrowed money on debentures (and after 1886 they borrowed only in that way) the capital so borrowed was assumed to bear interest at the rate of the average dividend paid on *all* the capital, share or loan, of the company; and the surplus of that amount over the interest payable on the debenture plus 1 per cent. for management was to be paid to the City Chamberlain as a trustee, and invested by him in shares of the companies, the interest being again so invested, in order ultimately to extinguish the capital of the companies, or for any other purpose determined by Parliament. The net effect has not been very con-

siderable; in 1897 the amount received by the Chamberlain was only £4,804, though it was estimated that the annual amount available would reach to nearly £120,000 by 1915.

2. Municipalization.

These arrangements have been described at some length, since they constitute the most elaborate attempt yet made in England at the control of public services supplied by private enterprise. But they were never regarded as satisfactory, and the movement towards municipal ownership set in early. It was recommended by a Royal Commission in 1869; it was proposed by the City Corporation and the vestries in 1891; it was again recommended by a Parliamentary Committee in 1892; legislative efforts in the same direction were made constantly by the County Council after 1895. Though all these efforts failed, the discussion of the existing anomalies and the attention drawn to the growing difficulties of an adequate supply had their effect; gradually the principle of municipalization was generally accepted, and discussion was concentrated on such questions as the terms of purchase and the constitution of the new authority. Ultimately a Royal Commission, under the chairmanship of Lord Llandaff (1898-1902) recommended the purchase of the undertakings and the establishment of a Water Board; and with a number of alterations its proposals were adopted in the Metropolitan Water Act, 1902.

The new Metropolitan water area is about the same size as the area supplied by the companies. One or two small districts hitherto included are now excluded, but their place is taken by the areas hitherto supplied by the Tottenham and Enfield Urban District Councils, and by two small rural areas. In this "Water London" there are a great number of authorities; and as the government was unwilling to agree to the proposals of the County Council, which desired to supply its own area alone or, preferably, to deal with its own area directly and to supply the outside authorities in bulk at a fixed price, recourse was had to the plan of a Joint Board. The Metropolitan Water Board consists of representatives of the following authorities:

Inner London..	{	County Council.....	14
		City Corporation	2
		29 Met. Borough Councils	29
			— 45
Outer London..	{	5 County Councils	5
		2 Town Councils	3
		4 Urban District Councils	4
		5 Town Council and 33 Urban District Councils in 7 groups ³	7
			— 19
		Thames and Lea Conservancies.....	2
			— —
		Total members	66

The board elects its own chairman and deputy chairman from its own ranks, and may allot salaries to them if it so chooses, but it has resolved not to do so.

On July 25, 1904, the new authority took over the undertakings of the eight companies of the Staines Reservoirs Joint Committee, and of the Tottenham and Enfield Urban District Councils, with all their rights and liabilities. The purchase price of the undertakings was fixed by a court of arbitration consisting of a distinguished ex-lord of appeal, a well-known engineer, and a former Permanent Secretary of the Local Government Board; and in coming to a decision they were directed by the Act to make no allowance for compulsory sale, or for appreciation or depreciation in the market value of shares arising from the prospect of compulsory purchase, but only for the cost of reinvestment, or possible loss in awaiting it. The following table shows the amount claimed by the various companies, and the amount awarded by the arbitrators, whose decisions on points of law were all confirmed on appeal. The debentures were taken over by the board, and are to be replaced within two years by new "water stock" producing an equivalent amount:

³ In each of these groups the local authorities elect a joint committee, which in turn elect the representative, who must be a member of one of the councils.

TABLE V.

COMPANY.	Amount of claim.	Amount of award in cash.	Debentures on "appointed day."
Chelsea	£ 4,750,000	£ 3,305,700	£ 249,217
East London	7,204,144	3,900,000	2,251,166
Grand Junction	4,830,000	3,349,500	500,250
Kent	3,715,614	2,712,000	333,880
Lambeth	5,511,342	4,301,000	1,045,753
New River	13,260,144*	5,967,123	2,758,000
Southwark and Vauxhall	5,674,140	3,603,000	2,487,984
West Middlesex	4,200,240	3,524,000	772,000
Staines Reservoirs Committee			1,226,700
5% on claims other than that of New River Company†	49,145,624
	1,794,274
Totals	£50,939,898	£30,662,323	£11,624,948

* This is the original claim. When the Court of Arbitration gave judgment that the dividends of the New River Company were limited to 10 per cent., a judgment subsequently confirmed, the claim was reduced to £8,214,163.

† Except the New River Company, the companies claimed 5 per cent. on their claims or awards to cover loss pending, and cost of, reinvestment. The awards included sums in respect of these additional claims.

To pay these amounts the board may raise money by the issue of "water stock" bearing interest at not more than 3 per cent. and to be repaid in 100 years; and for other purposes it may borrow in the same way, but for a maximum period of only sixty years. Its borrowing operations are controlled, and its accounts audited by the Local Government Board.

The charges to be levied by the board are not to be reduced below those in force in the June quarter of 1903 unless such reduction will not cause a deficit, but within three years of the transfer the board is to introduce into Parliament a bill to provide for (a) a uniform scale of charges throughout the whole area, and (b) the collection of these charges along with the local rates. In the event of the receipts in any financial year not being equal to the expenditure, the deficiency is to be made up by rates levied throughout the area by precept addressed by the board to local authorities.

The new authority has been in existence for so short a time that it is impossible to express any opinion as to its probable working. Its constitution is cumbrous and unrepresentative, and so far it has aroused little, if any, popular interest. But the creation of

a central water authority of any kind, the speedy establishment of a uniform scale of charges, the consolidation of responsibility for the supply of the needs of an ever-increasing population—all these are substantial gains. On the financial side it is to be feared that there is not much prospect of relief for the consumers. The abolition of directors' fees and the consolidation of management may result in some economies, but it seems inevitable that the new authority must speedily seek fresh sources of supply, and undertake works which cannot be financially remunerative but must involve higher prices to the consumer or, as a lesser evil, a charge upon the rates.

II. LIGHTING.

A. Gas.

In many respects the history of the gas supply of London is a repetition of the story of the water supply, with the difference, however, that municipalization has not taken place, but the public authorities have turned their energies to competition with the gas companies by the supply of the rival illuminant-electric light.

The first company authorized by Parliament, by the usual Private Act, to supply part of what is now the metropolitan area, was the Gas Light and Coke Company, founded in 1810; and a number of others speedily followed. As with the water companies, Parliament intended that there should be competition, and for a considerable time there was a real and effective rivalry, with the natural results—chaos in the streets, excessive capital expenditure and great waste owing to the construction of different sets of mains in the same streets by competing companies, and a fall of charges which benefited the consumers for a time, but brought the companies into financial difficulties, and ultimately damaged the consumer, since when competition was eliminated in any area the surviving company naturally raised its charges in order to recoup itself for its losses during the struggle. The companies soon realized the costliness and futility of this rivalry, and as early as 1823 the first attempts to end it were made; for some years new companies were confined to separate areas. But in the absence of any effective regulation by the legislature, or of any strong local authority which could be en-

trusted with the supervision of the companies on behalf of the inhabitants of London, this policy of separate areas amounted to the creation of monopolies, and in 1842 the principle of competition was re-established. The companies then began to make arrangements between themselves, and tried first to come to agreements as to the "districting" of London; an arrangement was made for this purpose in 1851, but it could not be enforced, and a bill to give Parliamentary authority to the scheme failed to pass. In 1859 a Parliamentary committee enquired into the whole question, and recommended that each company should have a district assigned to it, and in return should be subject to restrictions as to prices and dividends, and conditions as to the quality of the supply; and in the following year there was legislation on the lines of this report. In the next decade the question of municipalization was much discussed, and though the Metropolitan Board of Works was steadily hostile to all schemes of the kind, there were a number of proposals put forward, particularly by the city corporation. None of them were carried, but the effect of the agitation, and the sympathetic attitude of Parliament, was the recognition by the companies of the necessity of submission to control, if they were to retain their privileges, and in 1875 and 1876 there were important legislative enactments on the subject. About the same time the companies began to combine, till the fifteen companies existent prior to 1870 had been reduced to three by 1885. The present companies have districted London, and there is no competition. Of recent years little has been heard of proposals for municipalization, partly owing to the amount of the control exercised over the companies and still more to the fact that the local authorities of the metropolitan area have preferred to devote their energies to the supply of the competing illuminant.

At present the supply of gas to the administrative county is almost entirely in the hands of three companies—the Gas Light and Coke Company, the South Metropolitan Gas Company, and the Commercial Gas Company. The first of these has the greater part of the area north of the Thames, and a small territory to the south; the South Metropolitan has the chief part of London south of the river; the Commercial has a district in the northeast. Smaller portions of the administrative county—in each case suburban areas—are supplied by the Brantford Company in the west, the Wandsworth & Putney Company in the southwest, and the South Suburban Com-

pany in the south. But we may conveniently confine our attention to the three great companies, and the following tables give some statistics in regard to them for the year ending June 30, 1904:

TABLE I.

	Gaslight and Coke Company.	South Metro- politan Gas Com- pany.	Commercial Gas Company
Share Capital { Authorized	£21,643,065	£6,761,224	£2,235,000
Paid up	21,643,065	6,250,000	1,935,000
Loan Capital { Authorized	5,073,975	2,048,994	550,000
Paid up	4,323,975	1,832,700	450,000
Premiums	1,586,807	808,860	49,589
Gas	3,051,844	1,255,712	348,153
Receipts { Meters		58,265	18,261
Stoves	62,740	46,556	7,854
Residual Products	895,065	550,777	104,111
Gross Profit	1,225,749	445,944	123,118
Dividend Paid on Shares	4 1-5%	5 5-12%	5½ and 5%

TABLE II.

	Gaslight and Coke Company.	South Metro- politan Gas Com- pany.	Commercial Gas Company.
No. of consumers	398,247	269,351	55,571
No. of public lamps supplied	49,004	22,449	4,205
Price of gas to consumer, per 1000 cubic feet, in June, 1904	3s.	2s. id.	2s. 6d.
Charge for public lamps per 1000 cubic feet	2s. 3d.	2s. id.	2s. 4d.
Candle power of gas	16	14	14

The charges and dividends of the companies are regulated and limited by a sliding scale, originally imposed upon them by the legislation of 1875 and 1876. In those years standard prices were fixed—3s. 9d. per 1,000 cubic feet for the Gas Light and Coke and Commercial Companies, 3s. 6d. for the South Metropolitan; when these rates were charged the companies could pay dividends of 10 per cent, but for every penny above the standard charge the standard dividend must be reduced $\frac{1}{4}$ per cent., whilst for every penny below the standard the dividend could be increased by $\frac{1}{4}$ per cent. In recent years (1896-1902) the three companies have converted their stock, under parliamentary authority, into corresponding amounts bearing a standard dividend of 4 per cent, so as to bring the nominal value of their stocks near to the market value—i. e., the nominal

stock has been multiplied by $2\frac{1}{2}$, and the standard dividend correspondingly divided by $2\frac{1}{2}$. Further the standard prices have all been reduced since the year 1900, and the variation of the dividend has been modified also. The present situation is that the standard prices are: For the Gas Light and Coke, 3s. 4d.; for the South Metropolitan, 3s. 1d.; for the Commercial, 3s. 3d. [The South Metropolitan price would have been 3s. 3d. but the company gave up 2d. in order to be allowed to supply 14-candle gas, and the Commercial surrendered part of its price for the same reason.] For all three companies the dividend varies 2s. 8d. per cent. for every penny change in the price of gas. The following table shows the prices in December of the years 1895-1904; it should be noted that for its small area on the south side of the Thames the Gas Light and Coke Company could not charge more than the South Metropolitan till 1901, and now may not charge more than 2d. above the price of the South Metropolitan:

TABLE III.

COMPANY.	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Gaslight and Coke:										
North of Thames ..	2. 10	2. 10	2. 10	3. 0	2. 11	3. 5	3. 0	3. 0	3. 0	2. 11
South of Thames ..	2. 3	2. 3	2. 3	2. 3	2. 1	2. 8	2. 5	2. 5	2. 5	2. 2
South Metropolitan	2. 3	2. 3	2. 3	2. 3	2. 1	2. 8	2. 3	2. 3	2. 3	2. 0
Commercial.....	2. 6	2. 6	2. 6	2. 6	2. 6	3. 0	2. 8	2. 8	2. 6	2. 5

It may be mentioned here that in December, 1904, the charges of the other three companies, previously mentioned as supplying portions of the metropolitan area, were: South Suburban, 2s. 7d.; Wandsworth and Putney, 2s. 2d.; Brantford, 2s. 9d.

It should be noticed, further, that the legislation of 1875-6 directed that all new stock should be offered to the public and allotted to the highest bidder; any premiums arising from these sales were to be applied by the companies as capital, but not to bear interest. The companies obtained in this way the large amounts given in Table I above, but the effect of the recent conversion of the stock has naturally been to reduce very considerably the sums so obtained, and in some cases stock has been issued below par. Finally, the South Metropolitan and Commercial Companies are now authorized to offer any new stock first to their employees and con-

sumers, at about current market price, and this power they commonly use. The growth of electric lighting is a serious menace to the gas companies, and is bound to affect their prices; they are actively engaged in pushing the use of gas for cooking purposes, and in endeavoring to prove that in some respects gas is superior to electric light for purposes of street illumination.

The quality of the gas supplied is fixed at 16-candle power for the Gas Light and Coke Company and 14-candle power for the other two. The County Council and the City Corporation both watch over the interests of the consumers within their areas by the appointment of Gas Examiners; there has been some difference of opinion between the authorities and the companies both as to the method of testing and as to the standard of purity, and the question is still under discussion. The London County Council is also the authority for the testing of the meters supplied by the companies whenever the consumers so desire and on payment of a small fee (6d. to 1s.).

B. Electric Light.

In recent years the Metropolitan local authorities—the Vestries prior to 1899, and then the Borough Councils which superseded them—have been actively engaged in the provision of electric light. The Electric Lighting Acts of 1882 and 1888 authorized the Board of Trade to grant “provisional orders,” *i. e.*, orders needing the more or less formal confirmation of Parliament, to local authorities and private companies enabling them to undertake the supply of electric light and power within areas prescribed in the orders. In the case of a local authority and a company applying for powers in the same area, preference has generally been given to the local authority; when the concession is granted to a company it cannot be bought out until the end of forty-two years, except by friendly agreement. Local authorities may be authorized to supply electricity in “any area, although the same or some part thereof may not be included within their own district.”

In London, in the middle of the year 1905, the supply of electricity was divided nearly equally between municipal and private undertakings. In the city of London the supply was in the hands of two companies. Of the twenty-eight metropolitan boroughs, in fourteen the councils were actually engaged in providing electric

light and power from works established by themselves, in one the works of a private company had just been purchased, and in another a scheme was under consideration; two councils had obtained provisional orders, but had let them fall into abeyance. In the remaining boroughs the supplies were furnished by private undertakings—the order in each case being consented to by the local authority. The municipal services were in areas whose total population amounted to about five-ninths of the inhabitants of the administrative county. The Metropolitan Borough Council of Shoreditch in 1897 commenced to utilize the heat raised by a dust destructor for the purpose of generating electricity, and the plan proved so successful that it has been imitated by a number of authorities, both within London and outside.

This local energy and enterprise is in many ways admirable, but it has some distinct disadvantages, especially of an economic character. In the case of electricity it is particularly true that the larger the area and amount of supply the smaller will be the cost of production and distribution per unit. The London County Council recognized the defects of the artificial and somewhat arbitrary limitation of areas in London, so far as this particular matter is concerned, by promoting bills to enable it to supply electricity in bulk to the borough councils, which would be authorized distributors. As the County Council is the tramway authority, with an extensive system of electric cars, the combination would probably have produced still further economies. But the efforts failed, and the attempt made in 1905 by a private combination to secure an Act authorizing it to establish a bulk supply for the whole of the administrative county at a uniform rate, failed before the opposition of most of the local authorities. But it is probable that the attempt will be repeated, and it is difficult to see how, from the economic standpoint, it can properly be opposed; and the possible abuse arising from a monopoly could be guarded against by a stringent system of control.